Faculty of Health, Science and Technology  
Mechanical and Materials Engineering

Syllabus

**Course Approval**
The syllabus was approved by the Faculty Board of Health, Science and Technology on 3 September 2014, and is valid from the Spring semester of 2015 at Karlstad University.

**Course Code:** MSGC28  
**Engineering Design II, M, 7.5 ECTS Credits**  
*(Konstruktionsteknik II, M, 7.5 Swedish credit points)*  
**Degree Level:** Bachelor  
**Progressive Specialisation:** G2F (First cycle, has at least 60 credits in first-cycle course/s as entry requirements)

**Language of Instruction**  
Swedish

**Prerequisites**
Mechanical Engineering 30 ECTS cr including mechanics, solid mechanics, materials engineerings, and engineering design 7.5 ECTS cr, functional elements 7.5 ECTS cr and manufacturing engineering 7.5 ECTS cr, or equivalent, or registration on the TGHMT programme.

**Major Field of Study**  
MTA (Mechanical Engineering)

**Learning Outcomes**

The aim of the course is that students acquire further knowledge of mechanical engineering design in the areas of design methodology, solid modelling, drawing production and design projects in groups. Great emphasis is put on the production of relevant manufacturing documentation.

Upon completion of the course, students should be able to:

**Design methodology**
- give an account of the relation between form, materials and the manufacturing process,
- choose relevant manufacturing method for a design and motivate the choice,
- perform selection of starting material for a design and motivate the choice.
- independently plan and perform a design task, including choice of materials and manufacturing method, on the basis of a requirement specification,
- choose and dimension relevant machine components in a machine construction,
- give an account of and use complex design support methods.

**Solid modelling/drawing production**
- model and edit complex parts and assemblies in a 3D CAD program,
- produce 2D drawings of complex details and compilations in a 3D CAD program,
- model parts and compilations in a 3D CAD program's special modules such as thin sheet and tube design models,
- structure complex designs in terms of quality modeling and drawing.
Content and Form of Instruction

Instruction is in the form of lectures, exercises, literature study and supervised CAD sessions which provide basic knowledge in the two areas. This is integrated in a major independently performed design task with an emphasis on design methodology, choice of materials, manufacturing method and manufacturing documentation.

The independent assignments are presented in seminars where the student group solutions are discussed and assessed.

Reading List

See separate document.

Examination

Assessment is based on hand-in assignments, mandatory seminars and a written exam.

Grades

One of the grades Fail (U), Pass (G) or Distinction (VG) is awarded in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

The local regulations for studies at the Bachelor’s and Master’s levels at Karlstad University stipulate the obligations and rights of students and staff.

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